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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/415,673	10/12/1999	HARMUT SCHON	2754/MEINKE	5149
26304	7590	04/15/2004	EXAMINER	
KATTEN MUCHIN ZAVIS ROSENMAN 575 MADISON AVENUE NEW YORK, NY 10022-2585			LEUNG, JENNIFER A	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/415,673	Applicant(s) SCHON, HARTMUT	
	Examiner Jennifer A. Leung	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,9 and 17-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,9 and 17-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 23, 2004 has been entered.

Response to Amendment

2. Applicant's amendment submitted on December 2, 2003 has been received and carefully considered. Claims 3-8 and 10-16 are cancelled. Claims 17-22 are newly added. Claims 1, 2, 9 and 17-22 remain active.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laquement et al. (U.S. 4,811,696) in view of Haerter (US 3,196,943).

Regarding claims 1 and 2, Laquement et al. (FIG. 2) discloses a fluidized bed reactor 10 having a reactor wall 74 with a heat exchange apparatus, said heat exchange apparatus comprising:

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a heat exchanger **60** including a plurality of tube packets **66** in a fluidized bed **100** (column 4, lines 44-51), pressurized by a heat transfer medium such as water; and

a ring pipe (manifolds **62**, **64**) coupled to the heat exchanger **60** and mounted directly onto an interior of the reactor wall **74**;

wherein the heat transfer medium is fed to tube packets **66** via ring pipe **62** and removed from tube packets **66** via ring pipe **64**, wherein the ring pipe **62/64** terminates in a distribution or collection chamber mounted on the reactor wall **74** (column 4, lines 20-43).

Lacquement et al. discloses ring pipes **62/64** being of essentially circular cross-section (see FIG. 2), wherein the coupling between ring pipes **62/64** and heat exchanger **60** includes an internal opening therebetween (i.e., located at the connection between the tube packets **66** and the wall of manifold **62/64**; see FIG. 2). However, Lacquement et al. is silent as to ring pipes **62/64** being configured such that, "... essentially one half of the cross-section [is] assigned to the interior of the reactor wall and one half of the cross-section [is] assigned to an exterior of the reactor wall, with a first internal opening defined on the reactor wall between the chamber halves, said first internal opening having a dimension less than the diameter of the circular cross section of the distribution or collection chamber."

Haerter (FIG. 1-3) teaches a heat exchange apparatus comprising a plurality of tube packets (tubes **17**) pressurized by a heat transfer medium such as water, wherein a distribution and collection chamber as defined by inlet header **15** and outlet header **21**, respectively, are provided to feed or remove heat transfer medium from tube packets **17**. Header **15/21** is essentially circular in cross-section, wherein one half of the cross-section is assigned to one side of a baffle plate or wall **25**, and the other half of the cross-section is assigned to the other side of

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the baffle plate or wall **25** (see FIG. 3). The heat exchange apparatus further comprises a first internal opening (aperture **27**) having a dimension less than the diameter of the circular cross-section and a second internal opening (i.e., located at the connection between tubes **17** and the wall of header **15/21**), wherein the first and second internal openings define a desired pressure loss, ensuring uniform flow over tube packets **17** (column 3, lines 45-71).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the heat exchange apparatus of Laquement et al. according to the teachings of Haerter above (i.e., such that ring pipes **62/64** were configured as headers **15/21** of Haerter and reactor wall **74** was configured as a baffle plate or wall **25** having opening **27** of Haerter), because such a configuration would provide, "... a heat exchanger containing means within its distributor or inlet header which distributes a fluid medium to substantially equalize the flow to the different heat exchange tubes," and "... a plurality of zones having different dynamic and static pressures to insure a better distribution of fluid to each heat exchange tube connected thereto," (Haerter; column 1, lines 45-55; also, column 3, line 72 to column 4, line 20). Also, it has been held that the substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Regarding claims 17-20, the collective teachings of Laquement et al. and Haerter are silent as to the specific relative dimensions of the first and second openings in the modified apparatus above. However, Haerter teaches that, "[t]he baffle plate has at least one opening therein *substantially less in area than the area of the plate* to permit flow of fluid through the plate," (column 2, lines 9-12), "[t]he inlet header **15** is furnished with a distribution baffle plate

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25 having a substantially centrally located aperture of *suitable size and shape*,” (column 2, lines 44-46), and “[t]he sizes of the... aperture **27** are *dependent upon the dynamic pressure of the fluid* entering the inlet connection **13**,” (column 2, lines 59-61). Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate dimension for the first opening relative to the second opening (i.e., such as the recited same or differing dimensions) in the modified apparatus of Laquement et al., because the relative dimensions would have been considered a result effective variable by one having ordinary skill in the art. Accordingly, one having ordinary skill in the art would have routinely optimized the dimension of the first opening relative to the second opening to obtain the desired flow distribution or pressure drop in the heat exchange apparatus, depending upon the dynamic pressure of the fluid entering the distributor, and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

4. Claims 9, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laquement et al. (U.S. 4,811,696) in view of Haerter (US 3,196,943), and further in view of Vancamp et al. (U.S. 3,679,373).

Regarding claim 9, the collective teachings of Laquement et al. and Haerter disclose a method of providing heat exchange in a fluidized bed reactor, the method comprising the steps of providing a heat exchanger and ring pipe in the form of a distribution or collection chamber to a fluidized bed, utilizing the apparatus as disclosed in claims 1 and 2 above (the same comments apply). However, Laquement et al. and Haerter are collectively silent as to whether the modified fluidized bed reactor **10**, above, may be used for the oxychlorination reaction of ethylene with

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oxygen and HCl. In any event it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the modified apparatus of Laquement et al. for said reaction, because it is well known in the art to conduct the oxychlorination of ethylene in a fluidized bed reactor, wherein the heat of reaction is transferred to a heat exchange means located within the reactor. To evidence conventionality, Vancamp et al. teaches a process for the oxychlorination of ethylene, wherein the process is conducted within a fluidized bed reactor similar in structure and function to the modified apparatus of Laquement et al., wherein the reactor comprises a heat exchanger comprising a plurality of serpentine conduits 8 (i.e., substantially equivalent to the heat exchanger comprising tube packets disclosed above) that pass a heat transfer medium for cooling the reaction (FIG. 1, 2; column 3, lines 5-16; column 1, lines 14-21; 25-42). Furthermore, apparatus limitations, unless they affect the process in a manipulative sense, may have little weight in process claims. *In re Tarczy-Hornoch* 158 USPQ 141, 150 (CCPA 1968); *In re Edwards* 128 USPQ 387 (CCPA 1961); *Stalego v. Heymes* 120 USPQ 473, 478 (CCPA 1959); *Ex parte Hart* 117 USPQ 193 (PO BdPat App 1957); *In re Freeman* 44 USPQ 116 (CCPA 1940); *In re Sweeney* 72 USPQ 501 (CCPA 1947).

Regarding claims 21 and 22, the collective teachings of Laquement et al., Haerter and Vancamp et al. are silent as to the specific relative dimensions for the first and second openings in the modified method above. The same comments with respect to Laquement et al. and Haerter apply (see comments in claims 17-20 above).

Response to Arguments

5. Applicant's arguments with respect to claims 1, 2, 9 and 17-22 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Anderegg and Ando are provided to further illustrate the state of the art.

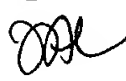
* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung

April 12, 2004 



**HIEN TRAN
PRIMARY EXAMINER**